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HUNGARIAN NOTES ON SOVIET NUCLEAR PHYSICS RESEARCH

MESONS RESEARCH -- Termeszeti es Technika, No 6, Jun 50

In the field of chain reactions greater progress has been undoubtedly made than indicated by scientific literature. In the Soviet Union the Darydov Plan is being carried out on an unprecedented scale, capable of utilizing nuclear forces for peaceful purposes. It affords a hint of the fact that the scientists have solved many problems, about which outsiders know only that they exist.

Tamm and Ivanenko, two Soviet scientists, have shown that on the basis of the Fermi constant no nuclear force may develop through electronic transformation in such magnitudes as are observed in reality.

The Soviet scientists, A. I. Alikhanov and his brother, Alikhanyan, are using a powerful magnet for their experiments on particles with a mass between that of an electron and a nucleon. Their counters are located at Alagez in the Caucasus at an altitude of 3,400 meters. According to their observations, there are 12 different particles between the electron and proton, and four more particles greater than the proton in mass. They suggested that, because of their varying mass, these particles be named varitrons.

Meson research by means of the photo emulsion method is being conducted especially by A. P. Zhdanov and his associates. In these investigations L. I. Shur prepared the photographic plates, and Yermakov studied the fission of boron. They found that under the effect of negative pi-meson of cosmic origin, the boron nucleus is split into eight or nine parts and that the fission products contain mu-mesons. Zhdanov also concluded that there must exist a meson with a mass 140 to 150 times the mass of the electron, which causes the break-up of the boron nucleus.

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SOVIET WORK IN ATOMIC PHYSICS -- Termesztudományok és Technika, No. 5, May 50

The largest Van de Graaf electrostatic generator [in the USSR?] was built in Kharkov. At 4 megavolts it develops 20 milliamperes, equaling the radiation of many kilograms of radium.

The first installations called betatrons, capable of producing high-voltage electrons, were built in 1940 in the Soviet Union and the US independently of each other. In the Soviet Union they are connected with the name of Terletskiy who published his investigation in 1941. The published article was reviewed in the German Physikalische Berichte. Terletskiy, however, discussed only the underlying principle, so that the reviewing German physicist could merely surmise the practical possibilities.

Two other Soviet physicists, Pomeranchuk and Ivanenko, were the first to examine the limits of energy produced by the betatron. -- Peter Farago

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